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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,769	09/23/2003	Kenneth R. Smits	42P11022C	4381

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Chui-Kiu Teresa Wong
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Seventh Floor
12400 Wilshire Boulevard
Los Angeles, CA 90025-1026

EXAMINER

ROJAS, MIDYS

ART UNIT	PAPER NUMBER
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2185

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/17/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/669,769	Applicant(s) SMITS, KENNETH R.	
	Examiner Midys Rojas	Art Unit 2185	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 11/1/06 have been fully considered but they are not persuasive.

Applicant argues that Figure 3 of Kronstadt merely shows a conglomeration of signals from the memory controller to the memory system, which includes bi-directional signals. However, Figure 4 further elaborates on Figure 3 by showing the indeed the RAS and CAS signals are uni-directional. The Examiner would like to point out that the signal lines represented in Figure 3 are bi-directional regardless of the signal lines represented in Figure 4. Therefore, using the teaching of Figure 3, Kronstadt does teach signal lines that can carry information to and from the memory banks. This is supported by Kronstadt's teaching of the memory controller accessing the DRAMs for read or write operations (Col. 3, lines 15-18). Since the memory controller performs read and write accesses, it must have signal lines to carry information to the memory banks (for a write operation) and signal lines to carry information from the memory banks (as the result of a read operation).

These signal lines can also access the redundant bank, since in the invention of Kronstadt, one of the banks represented in the figures can be supported as a redundant memory bank (Col. 4, lines 39-45).

Claim Objections

2. Claims 1 is objected to because of the following informalities:

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In lines 4-5, some words appear to be missing from the limitation "...a bus having data lines to carry data from the regular arrays **the redundant array...**". Clarification of this claim is necessary.

The examiner will interpret the limitation as "...a bus having data lines to carry data from the regular arrays **and to carry data from the redundant array...**"

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-5, 7, 9, and 12-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Kronstadt et al. (4,725,945).

Regarding Claim 1, Kronstadt teaches a memory 12 (Figure 4) comprising: a plurality of arrays of memory cells (memory banks 1- n), the arrays being arranged in banks, each bank including regular arrays (array of static column mode dynamic random access memories, Column 2, lines 11-28) and a redundant array (supports one or more redundant memory banks, Column 4, lines 25-45); a bus having data lines to carry data from the regular arrays and to carry data from the redundant array (data lines to/from memory controller 18 to/from memory system 16; denoted as a single bi-directional signal line in Figure 3; also since controller 18 can access the memory for reads and writes, the signal lines must be bi-directional, Col. 3, lines 15-18); circuitry to connect (controller 18) a first set of information from the regular array to a first set of the data lines and to connect a second set of information from the regular array and the redundant

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array to a second set of the data lines (Figure 3, data lines between memory controller and memory system). Memory controller 18 controls the data lines connecting to the different memory banks (Column 3, lines 9-20).

Kronstadt describes these connection lines as data lines (signal lines, Col. 3, lines 9-25).

Regarding Claims 7 and 12, Kronstadt discloses a memory 12 (Figure 4), comprising: a plurality of arrays of memory cells, the arrays being arranged in banks (banks 1 – n), each bank including regular arrays (array of static column mode dynamic random access memories, Column 2, lines 11-28), $A_{sub.0-N}$, and a redundant array (supports one or more redundant memory banks, Column 4, lines 25-45); a data bus having sets of $N+1$ sets of bus lines, $B_{sub.0-N}$, to communicate data from the regular arrays and to said redundant array (data lines to/from memory controller 18 to/from memory system 16; denoted as a single bi-directional signal line in Figure 3; also since controller 18 can access the memory for reads and writes, the signal lines must be bi-directional, Col. 3, lines 15-18); logic associated with each array (controller 18), to communicate data from an i th regular array to an i th set of the bus lines, with the redundant array being disconnected from the data bus; wherein the logic is to disconnect the regular array, $A_{sub.i}$, from the data bus and to connect the redundant array to the data bus in response to a change in state of a bit associated with a cache bank. In instances where invalid banks are identified prior to an access, the access of an invalid bank is avoided. In this system, the invalid bank can be avoided by disabling the data line to such bank. In this case, the data line is not affected, but its connection to the invalid bank may be discontinued (Column 3, lines 15-45 and Column 4, lines 6-14). This is demonstrated by the instance in which banks are labeled invalid

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and a cache miss occurs until the banks are labeled valid again. The system avoids access to invalid banks. Kronstadt describes its connection lines as data lines (signal lines, Col. 3, lines 9-25).

Regarding Claims 2 and 13, Kronstadt discloses the memory of claim 1 wherein the circuitry (controller 18) comprises a bit (valid field) that, when set to a first logic state (identifies invalid banks), causes the circuitry to disconnect the regular array from the bus. In instances where invalid banks are identified prior to an access, the access of an invalid bank is avoided if possible. In this system, the invalid bank can be avoided by disabling the data line to such bank. In this case, the data line is not affected, but its connection to the invalid bank may be discontinued (Column 3, lines 15-45).

Regarding Claim 3, if the redundant bank is identified as a valid bank, such identification ("setting of the bit") can cause the controller to connect the redundant banks to a data line (See Figure 4).

Regarding Claims 4-5 and 9, the banks of Kronstadt et al. are arranged in a vertical linear configuration (See Figure 4) in which each banks is placed in one of multiple rows.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 10 and 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Kronstadt et al. (4,725,945) in view of Parulkar (6,769,081).

Regarding Claims 10 and 14, Kronstadt teaches the invention of Claims 7 and 12 above. The controller of Kronstadt et al. has circuitry to set a bit in accordance to the validity of a bank. However, Kronstadt does not teach setting the conductivity of a fuse to change the status of a bit. Parulkar discloses a programmable fuse used to set an address bit (Column 4, lines 30-48). It would have been obvious to one of ordinary skill in the art at the time the invention was made to set the bit of Kronstadt in the same manner as that of Parulkar because fuses are commonly found as components in computer systems and setting a fuse's conductivity is a quick and effective way to affect the value of a bit.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Midys Rojas whose telephone number is (571) 272-4207. The examiner can normally be reached on M-F 5:30am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sanjiv Shah can be reached on (571) 272-4098. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

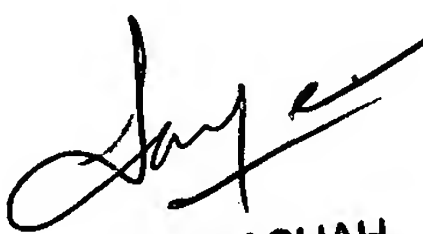
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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

January 4, 2007


Midys Rojas
Examiner
Art Unit 2185

MR


SANJIV SHAH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100